

REMARKS/ARGUMENTS

Claims 1-3 have been canceled. New Claims 4-8 are active in the case.

Reconsideration is respectfully requested.

Claim Amendments

Claims 1-3 have been canceled in favor of new Claims 4-8. Original Claims 1 and 2 provide basis for new Claims 4 and 5. New Claim 6 is supported by the disclosure at page 4, last paragraph and Claim 7 by the disclosure at page 13, lines 25-34. New Claim 8 is supported by Claim 3. None of the new claims introduces new matter into the case. Entry of the new claims is respectfully requested.

Claim Rejection, 35 USC 112

The issues that have been raised with respect to Claims 1-3 are believed to have been resolved by the presentation of new Claims 4, 5 and 8. As to the range of 20 to 100 % in Claim 4, it is obvious from the language employed that applicants are referring to the percentage of hydrolyzed formamide groups. As to the range of 3 to 40 wt %, this obviously means that the amount of ash (upon combustion) is in terms of percentage by weight. What else can it possibly mean?

Claim Rejection, 35 USC 103

Claims 1-3 stand rejected based on 35 USC 103 as obvious over Lai et al, EP 331047. This ground of rejection is respectfully traversed.

It is clear that the Lai et al patent discloses a method of treating paper pulp with a polymeric material that is comprised of units of vinylamine. Paper stock treated with the polymeric material exhibits an increase in retention, drainage rate and flocculation. The

reference in the last line of page 5 mentions that an increase in the retention of titanium dioxide in those paper making processes that employ the white pigment as a filler. Example 12 of the document demonstrates the ability of a vinylamine homopolymer in facilitating the retention of  $\text{TiO}_2$  in the fibers of a wood pulp. The results of several experiments are shown in Table 4 of the document. The reference states that the 7 MM polyvinylamine demonstrates a superior  $\text{TiO}_2$  retention ability at a 0.1 to 0.2 % addition level to wood pulp. However, the present process as claimed is distinguished over that of the reference in the stated amount of a polymer containing vinylamine units. As set forth in present Claim 4, the cationic polymer component of the present process is defined in terms of a component (A) which comprises at least 0.0005 %, but less than 0.05 %, by conversion to solids concentration in terms of the dry mass of raw material pulp, of a polymer obtained by 20 to 100 % hydrolysis of the total formyl groups in a polymer having at least N-vinylformamide units as a polymerization component. The data in Table 2 of the present specification show the favourably increased opacities of paper obtained from by treatment of the cationic polymer of the present claims, along with either  $\text{TiO}_2$  or  $\text{CaCO}_3$ , within the quantitative ranges set forth in the present claims. Thus, applicants maintain that upon the basis of the distinguishing quantitative description of the cationic polymer in the present claims, the invention is unobvious over Lai et al. Withdrawal of the rejection is respectfully requested.

Claims 1-3 stand rejected based on 35 USC 103 as obvious over Hartmann et al., U. S. Patent 5,008,321 in view of Utecht et al., U. S. Patent 6,184,310 and Lai et al. This ground of rejection is respectfully traversed.

Hartmann et al discloses the preparation of stable water-in-oil emulsions of hydrolyzed polymers of N-vinylamides that are useful as drainage aids, retention aids and flocculants. However, there is no teaching or suggestion of the use of polymers containing hydrolyzed vinylamine units in relatively small quantities in conjunction with a filler of either

TiO<sub>2</sub> or CaCO<sub>3</sub> with the result that a paper product is obtained which exhibits increased opacity.

As to the remaining Lai et al and Utecht et al references, the Lai et al reference is believed to be more relevant to the present invention than the cited Hartmann et al document. Hartmann et al does not disclose the fixation of particulate filler, specifically TiO<sub>2</sub> or CaCO<sub>3</sub> particles, in a paper stock with the polymer disclosed in the reference. Further, Utecht et al is of secondary interest because it only discloses polymers which contain carbamate units, prepared by reacting polyethyleneimines or addition polymers which contain vinylamine units. Accordingly, the cited prior art in combination does not suggest the present invention. Withdrawal of the rejection is respectfully requested.

Claim 3 stands rejected based on 35 USC 103 as obvious over Lai et al in view of Takahata et al '558, Snow et al, '318 or Koichi et al, '292. This ground of rejection is respectfully traversed.

The cited Takahata et al and Snow et al patents are less relevant to the present invention than the Lai et al patent, and therefore neither reference contains any disclosure which brings the Lai et al patent closer to the present invention in any of its claimed embodiments. Further, Koichi et al, in only disclosing that the incorporation of calcium carbonate and titanium dioxide into paper stock, imparts opacity and whiteness to a paper stock, discloses nothing new. Certainly, the reference does not provide any disclosure which makes the remaining references of the rejection any more relevant than the Lai et al disclosure already is. Accordingly, the rejection of Claim 3 is overcome and withdrawal of the rejection is respectfully requested.

Claim 3 stands rejected based on 35 USC 103 as obvious over Hartmann et al and Utecht et al, further in view of Takahata et al '558, Snow et al, '318 or Koichi et al, '292. This ground of rejection is respectfully traversed.

As seen in the discussion above, the Hartmann et al document discloses only the preparation of stable water-in-oil emulsions of hydrolyzed polymers of N-vinylamides that are useful as drainage aids, retention aids and flocculants. However, there is no teaching or suggestion of the use of polymers containing hydrolyzed vinylamine units in relatively small quantities in conjunction with a filler of either  $\text{TiO}_2$  or  $\text{CaCO}_3$  with the result that a paper product is obtained which exhibits increased opacity.

As to Utecht et al, the same is of secondary interest because it only discloses polymers which contain carbamate units, prepared by reacting polyethyleneimines or addition polymers which contain vinylamine units. It does not take the disclosure of Hartmann et al closer to the present paper product as claimed in Claim 3 (new Claim 8) as to the matter of the amount of vinylamine containing polymer in fixing  $\text{TiO}_2$  or  $\text{CaCO}_3$  filler to paper stock.

The cited Takahata et al and Snow et al patents are less relevant to the present invention than Hartmann et al patent, and therefore neither reference contains any disclosure which brings the Hartmann et al patent closer to the present invention. Further, Koichi et al, in only disclosing that the incorporation of calcium carbonate and titanium dioxide into paper stock, imparts opacity and whiteness to a paper stock, discloses nothing new. Accordingly, the rejection of Claim 3 is overcome and withdrawal of the rejection is respectfully requested.

Application No. 10/581,459  
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It is believed that the application is in proper condition for allowance. Early notice to this effect is earnestly solicited.

Respectfully submitted,

OBLON, SPIVAK, McCLELLAND,  
MAIER & NEUSTADT, P.C.  
Norman F. Oblon



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Frederick D. Vastine, Ph.D.  
Attorney of Record  
Registration No. 27,013

Customer Number

**22850**

Tel: (703) 413-3000  
Fax: (703) 413 -2220  
(OSMMN 08/07)